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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/725,214

12/01/2003

Muraleedharan G. Nair

MSU 4.1-672

4443

21036

7590

07/25/2006

MCLEOD & MOYNE, P.C.  
2190 COMMONS PARKWAY  
OKEMOS, MI 48864

EXAMINER

FLOOD, MICHELE C

ART UNIT

PAPER NUMBER

1655

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/725,214	NAIR ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Michele Flood	1655	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Acknowledgment is made of the receipt and entry of the Declaration under 37 C.F.R. § 1.132 of one the inventors of the present application, Muraleedharan G. Nair.

#### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 29, 2006 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1 and 5-7 are under examination.**

#### ***Response to Arguments***

##### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 5-7 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an *in vitro* method for inhibiting the proliferation of

HCT-116 colon cancer cells and AGS stomach cancer cells comprising contacting the cells with an effective amount of a composition consisting essentially of malvidin, does not reasonably provide enablement for a method for *in vivo* inhibition in a mammal of proliferation in the stomach, colon and in both the stomach and colon of any and all colon cells and/or any and all stomach cancer cells which comprises providing an effective amount of malvidin as an active ingredient to the mammal so as to inhibit the proliferation of the cells. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. Full consideration was given to Applicant's arguments and the statements made therein the Declaration under 37 C.F.R. § 1.132 of one the inventors of the present application, Muraleedharan G. Nair, however the rejection remains essentially same for the reasons set forth in the previous Office action and for the reasons set forth herein.

The claims are directed to a method for *in vivo* inhibition in a mammal of proliferation in the stomach, colon and in both the stomach and colon of cancer cells which comprises providing an effective amount of malvidin as an active ingredient to the mammal so as to inhibit the proliferation of the cells. The claims are further directed to the method of claim 1 wherein the cells are in a mammal and the malvidin is feed orally to the mammal. The claims are further directed to the composition of claim 1 wherein the composition is in a pharmaceutical carrier; and wherein the stomach cell is AGS and the colon cell is HCT 156 (An apparent typographical error in line 2 of Claim 7; See "*Claim Objections*", set forth below.) both as maintained by the American Type Culture Collection.

The factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands*, 858 F.2d 731, 737, 8 USPQ2D 1400, 1404

(Fed. Cir. 1988) (a) the breadth of the claims; (b) the nature of the invention; (c) the state of the prior art; (d) the level of one of ordinary skill; (e) the level of predictability in the art; (f) the amount of direction provided by the inventor; (g) the existence of working examples; and (h) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. While all of these factors are considered, a sufficient number are discussed below so as to create a *prima facie* case.

While Applicant has reasonably disclosed an *in vitro* method for inhibiting the proliferation of colon cancer (HCT-116) cells and stomach (AGS) cancer cells comprising incubating the American Type Culture Collection (Rockville, MD) human cancer cell lines in the presence of malvidin, Applicant has not demonstrated an *in vivo* method comprising orally administering an effective amount of the claim-designated composition to a mammal to provide the claimed beneficial functional effect for the inhibition of the proliferation in either the stomach or the colon, much less in both the stomach and the colon of either HCT-116 colon cancer cells or AGS stomach colon cancer cells, much less the claimed beneficial functional effect for the inhibition of the proliferation in either the stomach or the colon of any and all colon cancer cells or stomach cancer cells comprising providing an effective amount of a composition consisting essentially of malvidin, and wherein the malvidin is fed orally to the mammal, as broadly claimed by Applicant. For example, at [0043] of the present application, Applicant discloses, "Malvidin and pelargonidin were in particular found to be excellent inhibitors of stomach and colon cancer cell lines *in vitro*." However, nowhere in the present specification, as originally filed, does Applicant disclose a method comprising the oral administration of an effective amount of a composition consisting essentially of malvidin to a mammal in need thereof to inhibit the proliferation of either stomach or colon cancer cells therein the mammal or data there from. Instead, Applicant discloses

only an *in vitro* method for the inhibition of the proliferation of colon (HCT) and stomach (AGS) cells comprising contacting the human cancer cell lines in the presence of dose amounts of malvidin. Given the limited data as to the cancer model used to assess the efficacy of the disclosed composition and the limited disclosure other than the mere mention that the disclosed compositions were inhibitors of the claim-designated human stomach and colon cancer cell lines *in vitro*, it seems highly unlikely that one of skill in the art would be able to use the claim-designated composition for the *in vivo* inhibition of proliferation in either the stomach and/or colon of the claim-designated human stomach and/or colon cancer cell lines, much less any and all stomach and/or colon cancer cells, comprising providing the mammal with an effective amount of a composition consisting essentially of malvidin, even after extensive experimentation.

It should also be noted that the state of the art at the time of filing of the present specification suggested that the delivery of therapeutic drugs which exhibit anti-tumor activity in cancer models do not necessarily have the same beneficial functional effect in humans as disclosed by Fredic Golden (Gorman, Christine. Cancer, "How to tell the hype from the hope: A Special Report", Time, 1998, pages 37-46.) and as disclosed by Trisha Gura ("Cancer Models: Systems for Identifying New Drugs are Often Faulty", Science, 1997, Vol. 278, pages 1041-1042.). Gura further discloses various different cancer models other than murine cancer models that are not predictive of the anti-cancer activity of potential anticancer agents when delivered to humans. In another instance, Jain (Jain, Rakesh K., "Delivery of molecular medicine to solid tumors", Science (1996), Vol. 271, pages 1079-1080.) discloses that while promising chemotherapeutic agents exhibit activity against cancer cells *in vitro* and *in vivo* tumor systems, these same agents heralded as breakthrough drugs do not have the same functional effect in humans when delivered to humans bearing tumors. Moreover, while

Applicant discloses malvidin as an inhibitor of colon cells, Katsube et al. teaches, "Only pure delphinidin and the glycoside isolated from the bilberry extract, but not malvidin and the glycoside, inhibited the growth of HCT 116 cells".

There is no guidance in the specification, other than the aforementioned examples directed to an *in vitro* method for inhibiting the proliferation of human cell lines of stomach and colon cancer comprising contacting the cells with a dose amount of a composition consisting essentially of malvidin. Given the insufficient guidance in the specification as to how to carry out the instantly claimed invention, the lack of working examples, the lack of correlative working examples, and the state of the art at the time the specification was filed, the claimed method for the *in vivo* inhibition of the proliferation of either or both of any and all stomach and any and all colon cancer cells in a mammal comprising the administration of an effective amount of the claim-designated composition would require an undue amount of experimentation without a predictable degree of success on the part of the skilled artisan.

Accordingly, it would take undue experimentation without a reasonable expectation of success for one skill in the art to provide the claimed method for *in vivo* inhibition in a mammal of proliferation in the stomach, colon and in both the stomach and colon of any and all stomach and/or any and all stomach cancer cells or the claim-designated AGS stomach cancer cell line or the claim-designated HCT 116 colon cancer cell line comprising providing the mammal with an effective amount of a composition consisting essentially of malvidin to inhibit the proliferation of the cancerous cells, as broadly claimed by Applicant.

In response to Applicant's arguments with regard to the previous Office action, Applicant directs the Examiner to the Declaration under 37 C.F.R. § 1.132 filed by Muraleedharan G. Nair that "shows the cell lines HCT-116 and AGS are recognized as

correlating to the specific conditions of human colon cancer and human stomach cancer, respectively". Thereby, Applicant's main arguments are directed to idea that the specification provides enablement for the instantly claimed method for "*in vivo*" inhibition in a mammal of either stomach and/or colon cell proliferation because the particular cell lines, namely the AGS stomach cell and the HCT-116 colon cell line, are recognized as models correlating to the specific conditions of the claimed method. Applicant further argues case law. Each of Applicant's arguments, as well as the 1.132 Declaration filed by Nair, have been thoroughly considered but they are neither persuasive nor commensurate in scope to the limitations of the claimed invention with regard to Applicant's disclosure or issues of the rejections made by the Examiner in the previous Office action for all of the reason set forth clearly in the previous Office action and for the reasons set forth herein. For example, on page five of Applicant's "Remarks/Arguments" filed on June 29, 2006, second paragraph to page 6, first paragraph, Applicant appears to assert that the Examiner failed to establish a *prima facie* case of lack of enablement in the previous Office action. Nevertheless, Applicant is invited to revisit page 3 of the previous Office action, second paragraph bridging page 6, first paragraph, wherein the present claims were rejected under 35 U.S.C. 112, first paragraph. Given the foregoing and given that the Examiner properly interpreted the claims and their accompanying disclosure under the *in re* Wands factor analysis to determine whether undue experimentation is required to enable any person skilled in the art to make and/or use the invention commensurate in scope with the claims, Applicant's arguments are found unpersuasive; and, therefore the Office believes that the Examiner has met the initial burden because clear reasons for lack of enablement were given and clear reasons were given for a conclusion of lack of correlation of an "*in*



*vitro*" or "*in vivo*" animal model example as disclosed in the examples presented in Applicant's disclosure.

Nonetheless, Applicant may continue to argue otherwise. For instant, Applicant makes reference to the case law of *in re* Brana. However, at present, the facts of *in re* Brana do not apply to the instant issues because the Court's finding was based not on an issue of enablement of a claimed invention but the usefulness of an invention in the meaning of patent law. Herein, as well as in the previous Office action, the Examiner has not imposed a 35 U.S.C. 101 rejection of the instantly claimed invention. Instead, the claims were rejected under 35 U.S.C. 112, first paragraph, which addresses matters other than related to the question of whether or not an invention lacks utility. Thus, Applicant's arguments are not commensurate in scope to the instant issue and the facts of the case law of *in re* Brana are misapplied.

With regard to the Declaration under 37 C.F.R. § 1.132 filed by Muraleedharan G. Nair, full consideration was given to each statement and the teachings of the cited references referred to therein. However, nowhere in the declaration of Nair does Nair substantiate a correlation for a relationship between an *in vitro* model assay using either HCT-116 colon cancer cells or AGS stomach cancer cells and an *in vivo* animal model assay and the disclosed *in vitro* or *in vivo* animal model assay example in the specification to constitute a working example to enable any one skilled in the art to make and/or use the instantly claimed method of treatment, even in view of the cited references. For instance, Gieseg et al. ("*The influence of tumor size and environment on gene expression in commonly used human tumor lines*", BMC Cancer. 2004 Jul 15; 4:35) merely emphasizes by demonstration that recent advances in genomic technology allows molecular characterization of preclinical animal models of human tumors and/or tumor cancer cell lines grown *in vivo* or *in vitro* by using RNA profiling; and, Gieseg

concludes, "Routine RNA expression profiling of a selected set of genes could be used as a quality control tool for preclinical oncology studies and would allow the standardization of tumor models used worldwide." Furthermore, none of the abstracts of the references of Barranco et al. ("*Heterogeneous responses of an in vitro model of human stomach cancer to anticancer drugs*", Invest. New Drugs 1: 117-127, 1983; and, Barranco et al. "*Establishment and characterization of an in vitro model system for human adenocarcinoma of the stomach*", Cancer Res. 43: 1703-1709, 1983.) refer to AGS stomach cancer cell line as an *in vitro* model that correlates to the specific condition of stomach cancer cell.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 and 7 recite the limitation "The composition of Claim 1", in line 1. There is insufficient antecedent basis for this limitation in the claims, as the invention of Claim 1 is directed to a method, wherein the composition is administered to a mammal, and wherein the stomach cancer cell or the colon cancer cell is in a mammal.

***Claim Objections***

Claim 7 is objected to because of the following informalities: There is an apparent typographical error in line 2. Applicant may overcome the objection by replacing "HCT 156" with HCT 116. Appropriate correction is required.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michele Flood whose telephone number is 571-272-0964. The examiner can normally be reached on 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on 571-272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**MICHELE FLOOD**  
**PRIMARY EXAMINER**

Michele Flood  
Primary Examiner  
Art Unit 1655

MCF  
July 22, 2006